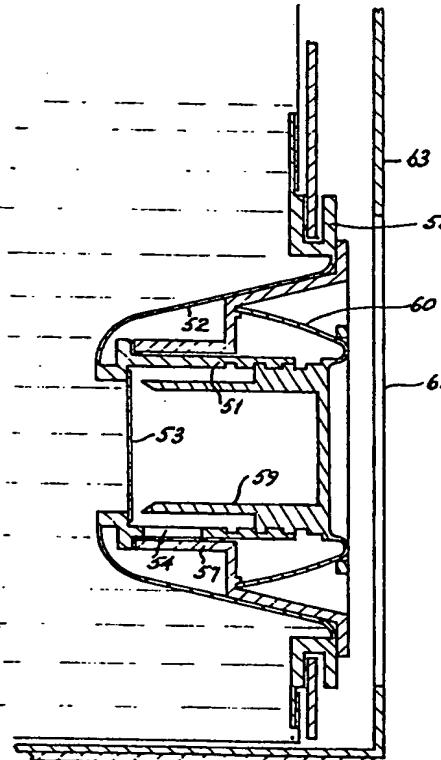


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(54) Title: IMPROVED DISPENSING VALVE		
(57) Abstract		
A dispensing valve for use with containers for liquids and particularly containers of the bag-in-box type is fitted within a flexible conical skirt (52) so that it can be retracted to a position within the container for transport and storage or pulled out to the operative position. The valve may be fitted with a frangible seal (53), to seal the contents of the container, that is ruptured or broken on the initial operation of the valve which is preferably provided with an inbuilt spring (60) which brings the flow control portion of the valve to the off position when released. The flow of liquid through the valve may be controlled by the operation of a spigot (59) slidably or rotatably mounted within the valve body or by a sleeve (57) slidably mounted on the outside of the valve body.		

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IMPROVED DISPENSING VALVE:

THIS INVENTION relates to an improved dispensing valve for containers for fluids and particularly containers of the "bag-in-box" variety.

The object of the invention is to provide a dispensing valve which is relatively easy to operate, which can be stored within the confines of the container when not in use and preferably in which the inlet end of the valve is provided with a frangible seal which ensures that the container remains sealed until the seal is broken by initial operation of the valve.

In one form the invention resides in a dispensing valve for a fluid container comprising a tubular body portion, a flexible skirt sealingly fitted between an opening in the container and the body portion of the valve such that said valve is movable between an inoperative position wherein the valve is located substantially within said opening in the container and an operative position wherein the valve is at least partially extended from said opening, an outlet opening provided in the body portion, a flow control portion coupled to the body portion for movement relative thereto between an "off" position and an "on" position with respect of said outlet a fluid passage provided in the body portion, the fluid passage being intended for fluid communication between the outlet and the container when the valve is in said operative position.

The flow control portion may be in the form of a spigot slidably or rotatably mounted within the body portion and being provided with a tubular passage therein connected to the fluid passage in the body portion and an opening leading from the tubular passage, said opening being adapted to register with the outlet opening of the body portion when the spigot is in the "on" position.



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Alternatively the flow control portion may be in the form of a sleeve slidably or rotatably mounted on the outside of the body portion for movement between a position in which the outlet is covered and a position in which the outlet is exposed.

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Preferably a frangible seal is fitted to said body portion for preventing fluid communication between the fluid container and the fluid passage of the spigot, said seal being adapted to be ruptured by the spigot on movement of the spigot relative to the body portion.

Preferably resilient means are provided to bias the flow control portion of the spigot to the "off" position.

The invention is particularly, although not exclusively, applicable for use with containers having an outer container of rigid or substantially rigid material and a flexible inner container or bag for holding liquid.

The invention will be better understood by reference to the following description of the specific embodiments shown in the drawings wherein:-

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Figure 1 is a sectional elevation of the first embodiment in the inoperative position;

Figure 2 is a sectional elevation of the first embodiment in an operative position;

Figure 3 is a sectional elevation of the first embodiment in the "on" position;

Figure 4 is a sectional elevation of the second embodiment with the flexible skirt shown half in the operative position and half in the inoperative position;

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Figure 5 is a sectional elevation of the second embodiment in the operative position with the seal ruptured;



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Figure 6 is a sectional elevation of the second embodiment with the flexible skirt in alternative positions;

Figure 7 is a sectional elevation of the third embodiment in the inoperative position;

Figure 8 is a sectional elevation of the third embodiment in the operative position;

Figure 9 is a sectional elevation of the third embodiment in the "on" position;

10 Figure 10 is a pictorial view of the dispensing valve of the first embodiment in the inoperative position;

Figure 11 is a pictorial view of the dispensing valve of the first embodiment in the operative position;

Figure 12 is a pictorial view of the dispensing valve of the first embodiment in the "on" position; and

20 Figures 13 to 19 inclusive show the construction of a third embodiment and the sequential filling and operating positions of the dispensing valve.

In the embodiments the dispensing valve is fitted to a container of the type having an outer container 11 of rigid or substantially rigid material and an inner container 13 formed of flexible plastics material.

30 The dispensing valve shown in the drawings comprises a tubular body portion 15 and a spigot 17 having a flow control portion 19 sealing mounted in the body portion 15. The spigot 17 is movable relative to the body portion between "on" and "off" positions. In the first embodiment shown in Figures 1 to 3, the spigot is adapted to slide axially along the tubular body portion between the "on" and "off" positions. In the second embodiment shown in Figures 4 to 6, the spigot is rotatable within the tubular body portion between the "on" and "off" positions. In the third embodiment shown in Figures 7 to 9 the spigot is adapted to slide



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axially along and rotate relative to the body portion between the "on" and "off" positions. A fluid passage 21 is provided in the flow control portion 19 of the spigot; the fluid passage is intended for fluid communication with liquid held in the inner container 13. The flow control portion 19 is provided with an opening 25 leading from the fluid passage 21; the opening 25 is adapted to register with an outlet opening 27 in the body portion when the spigot is moved to the "on" position, thus allowing fluid in the container to discharge through the outlet 27 of the valve. Resilient means 29 such as a multi-leaved spring are fitted between a control member 31 such as a button at the end of the spigot 17 remote from the container and the outer end of the body portion for biasing the spigot to the "off" position. The resilient means may be formed integrally with or separately from the spigot. A stop 33 on the spigot is slidably received in a recess 35 on the body portion for retaining the spigot in the body portion and for limiting the axial sliding movement of the spigot with respect to the body portion.

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A flange 36 is formed on the outer end of the body portion adjacent the control member 31 for use as a finger grip or support during operating of the control member 31.

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A flexible skirt 37 formed of resilient material extends between an opening in the container and the outer periphery of the body portion; in these embodiments the skirt is formed integrally with the body portion. The flexible skirt 37 has a retaining flange 39 which sealingly engages the inner container around the periphery of the said opening and may be slidably engaged in the outer container. The dispensing valve is movable between an inoperative position (as seen in Figures 1, 4, 7 and 10) wherein the valve is received in said opening in the container and an operative position (as seen in Figures 2, 5, 8 and 11) wherein the valve is at least partially extended from said opening. The resilient nature of the skirt 37 allows the skirt to "roll" and so accommodate movement of the valve between the opera-



tive and inoperative positions. As seen in the drawings the inner face of the control member 31 bears against the retaining flange 39 when the valve is in the inoperative position. The skirt supports the valve in the operative position.

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The inner end of the tubular body portion 15 is fitted with a frangible diaphragm or seal 41 for sealing fluid held in the container from the fluid passage 21 of the spigot. In the case of the first and third embodiments the adjacent end of the spigot is adapted to rupture the seal 41 when the spigot is first moved into the "on" position thus allowing fluid in the container to enter the fluid passage of the spigot.

In the second embodiment as shown in Figures 4 to 6, the spigot is adapted to first move axially along the body portion to rupture the seal and thereafter only rotate relative to the body between the "off" and "on" positions during subsequent use of the valve.

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In operation of the dispensing valve the user grasps the dispensing valve and retracts it from the inoperative position. As the dispensing valve is moved from the inoperative position the skirt 37 "rolls" to accommodate the movement and then assumes a position in which it supports the valve in the operative position. Whilst supporting the valve with his fingers as shown in Figure 12 of the drawings the user actuates the control member 31 so as to move the flow control portion 19 of the spigot from the "off" position towards the "on" position. As the spigot first moves to the "on" position the forward face thereof ruptures to seal 41 and allows liquid in the container to enter the fluid passage 21 of the spigot. When the spigot is in the "on" position the opening 25 therein is in register with the outlet opening 27, and hence the fluid in the passage 21 is able to discharge from the valve through the aligned openings 25 and 27. When the control member 31 is released the

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resilient means 29 causes the spigot to return to the "off" position in the case of the first and third embodiments. In the second embodiment the spigot is rotated to the "off" position.

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The skirt and body portion of the valve are fitted to the container by sealingly fitting the retaining flange 39 around an opening in a flexible sheet of plastics material. One or more further sheets of plastics material are then sealed to the sheet having the valve fitted thereto to form the flexible inner container of the fluid container, or sealing fitted to a precut complimentary opening in a pouch. The required volume of liquid may be introduced into the flexible inner container through the tubular body portion of the valve. The frangible seal 41 is then fitted to the tubular body portion by any suitable means. The spigot is inserted into the body portion with a removable spacer located between the flange 36 and the inner face of the control member 31. The spacer allows the spigot to sufficiently enter the body portion such that the stop 33 is located in the recess 35; however, the spacer prevents the spigot from rupturing the seal 41. Axial pressure is applied to the control member 31 to cause the dispensing valve to move towards the inoperative position. As the spacer contacts the retaining flange 39 the axial pressure on the control member is withdrawn and the spacer removed. The dispensing valve then assumes the inoperative position. In this position the inner face of the control member 31 bears against the retaining flange 39, thus preventing the spigot from rupturing the seal 41. The inner container is then introduced into the rigid or substantially rigid outer container of the fluid container and the retaining flange 39 passed through an opening of complementary shape in the outer container. The outer carton is then closed and sealed.

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In the embodiment shown in Figures 13 and 14 of the drawings the dispensing valve comprises a tubular body portion 51 connected to the outer end of a flexible skirt 52 which functions in the same manner as the flexible skirt 37 described in the previous embodiments. The inner end of the tubular body portion is provided with a frangible seal 53 which prevents communication between the contents of the container and an outlet 54 formed in the tubular body portion, the outer end of which is provided with an internal ratchet thread 56. A sealing ring 55 is provided around the periphery of the outlet. A sleeve 57 is slidably mounted on the outer face of the tubular body portion 51 and is provided on its outer end with an outwardly projecting flange 58. To facilitate the movement of the sleeve the tubular body is provided with a series of rails and the inner face of the sleeve seals on the sealing ring 55. A spigot 59 provided with an external ratchet thread which mates with the thread 55 projects into the tubular body portion 51. The spigot is provided with an outwardly directed return skirt 60 the outer periphery of which is provided with a recess so shaped as to engage and lock with a complementary shaped ridge provided at the junction of the outer end of the sleeve and the inner periphery of the flange. The inner end of the spigot is provided with a plurality of cutting teeth 61.

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As shown in Figure 13 the container is presented with the tubular body upwards and filled with the contents after which the frangible seal 53 is fitted and fixed in place as is seen in Figure 14. The sleeve 57 and spigot 59 are coupled together and the spigot inserted into the body 51 with a quarter of turn of the threads engaged. The whole assembly is then pushed inwardly the flexible skirt 52 folding back on itself to the transport position as shown in Figure 16 in which position the assembly is covered by a removable section 62 of an outer container 63.



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To dispense the contents the operator removes the removable section 62 and pulls out the assembly using pull handles or bails 64 as shown in Figure 17. The operator then rotates the spigot 59 to move it inwardly so that the teeth 61 engage and cut the seal 53. The seal is not completely cut as shown in Figure 18 so that it cannot cause blockages. The operator then uses his thumb and fingers to slide the sleeve outwardly to the on position as is shown in Figure 19 permitting the contents to discharge through the outlet 54. The spring effect of the skirt 60 returns the sleeve to the closed position over the outlet 54.

The ratchet thread prevents withdrawal of the spigot once the operative position has been reached (Figure 18). If desired the ratchet teeth may be replaced by a ratchet between the outer periphery of the skirt 60 and the sleeve 57 or by a locking pawl which engages the cutting teeth 61 or by a plurality of radial fingers on the spigot 59 so arranged to engage with a pawl on the anterior surface of the body 51.

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When containers fitted with the dispensing valve of the present invention are to be filled with liquids affected by exposure to the atmosphere such as wine it is desirable that a frangible seal be used as described above. With liquids not affected by the atmosphere such as oils and kerosene a seal is not necessary although it may be used as a safeguard against leaking during storage or transport. In some instances it may be desirable to fill the container through the open body of the dispensing valve before the installation of the spigot or the seal.



Claims

1. A dispensing valve for a fluid container comprising a tubular body portion, a flexible skirt sealingly fitted between an opening in the container and the body portion of the valve such that said valve is movable between an inoperative position wherein the valve is located substantially within said opening in the container and an operative position wherein the valve is at least partially extended from said opening, an outlet opening provided in the body portion, a flow control portion coupled to the body portion for movement relative thereto between an "off" position and an "on" position with respect of said outlet, a fluid passage provided in the body portion, the fluid passage being intended for fluid communication between the outlet and the container when the valve is in said operative position.
2. A dispensing valve as claimed in claim 1 wherein the flow control portion is in the form of a spigot slidably or rotatably mounted within the body portion and being provided with a tubular passage therein connected to the fluid passage in the body portion and an opening leading from the tubular passage, said opening being adapted to register with the outlet opening of the body portion when the spigot is in the "on" position.
3. A dispensing valve as claimed in claim 1 wherein the flow control portion is in the form of a sleeve slidably or rotatably mounted on the outside of the body portion between a position in which the outlet opening of the body portion is covered and a position in which the outlet is exposed.
4. A dispensing valve as claimed in claim 1, 2 or 3 wherein a frangible seal is fitted to or formed integral with said body portion for preventing fluid flow between the container and the fluid passage of the spigot, said seal



being adapted to be ruptured by the spigot on movement of the spigot relative to the body portion.

5. A dispensing valve as claimed in any one of the preceding claims wherein resilient means are provided to bias the flow control portion of the spigot to the "off" position.

6. A dispensing valve for a fluid container comprising a tubular body portion, a flexible skirt sealingly fitted between an opening in the container and the body portion of the valve such that the valve is movable between an inoperative position wherein the valve is located substantially within said opening in the container and an operative position wherein the valve body projects at least partially from said opening, a spigot mounted within the body so that it can slide axially along and rotate relative to the body portion, said spigot having a fluid passage formed therein and an opening adapted to be moved in and out of register with an outlet opening in the body portion, and resilient means for biassing the spigot to the "off" position.

7. A dispensing valve as claimed in claim 6 wherein the inner end of the body is fitted with a frangible diaphragm or seal and the inner end of the spigot is provided with means for rupturing said seal.

8. A dispensing valve for a fluid container comprising a tubular body portion, a flexible skirt sealingly fitted between an opening in the container and the body portion such that the valve is movable between an inoperative position wherein the valve is located substantially within said opening in the container and an operative position wherein the valve body projects at least partially from said opening, said body portion being provided with a fluid passage therein communicating with an outlet opening in the wall of the body portion, a sleeve is slidably mounted on the outer face of said body portion so that it can move



between an "off" position wherein said outlet opening is covered and an "on" position wherein said outlet opening is uncovered, said sleeve being provided on its outer end with an outwardly projecting flange and a spigot slidably mounted within the tubular body, the spigot being provided with an outwardly directed return skirt the outer periphery of which engages the flange on the sleeve to bias the sleeve towards the "off" position.

9. A dispensing valve as claimed in claim 8 wherein the outer face of the tubular body portion is provided with a series of spaced rails on which the sleeve slides and a sealing ring is provided around the periphery of the outlet opening.

10. A dispensing valve as claimed in claim 8 or 9 wherein the spigot is provided with an external ratchet thread which mates with a corresponding thread formed on the inner face of the tubular body portion.

11. A dispensing valve as claimed in claim 10 wherein the spigot is provided with one or more pawls which engage with corresponding stops on the inner face of the tubular body portion to prevent displacement of the spigot after its initial movement.

12. A dispensing valve substantially as herein described and as shown in Figures 1, 2 and 3 of the accompanying drawings.

13. A dispensing valve substantially as herein described and as shown in Figures 4, 5 and 6 of the accompanying drawings.

14. A dispensing valve substantially as herein described and as shown in Figures 7, 8 and 9 of the accompanying drawings.

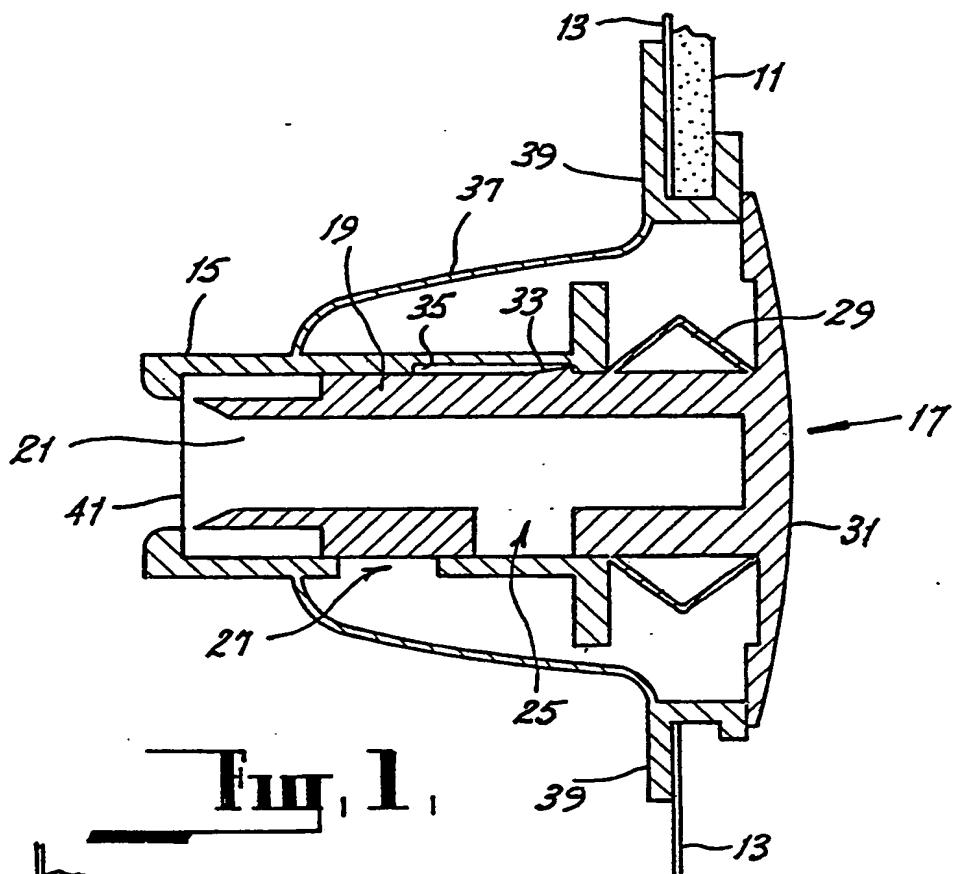


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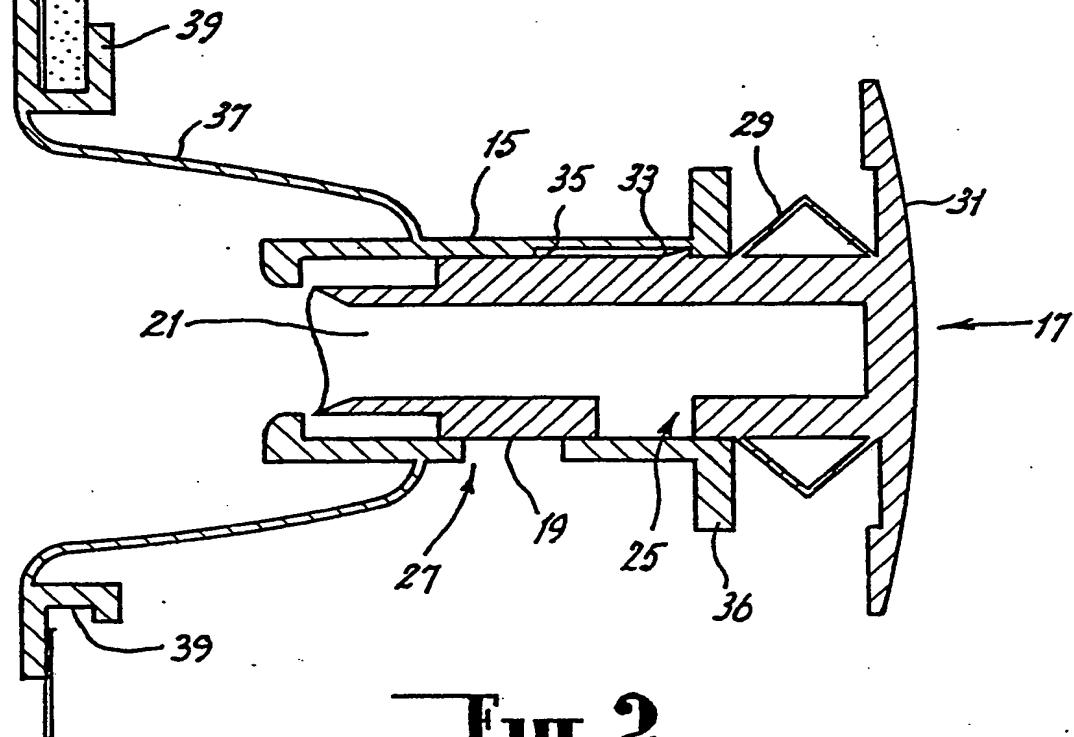
15. A dispensing valve substantially as herein described and as shown in Figures 13 to 19 inclusive of the accompanying drawings.



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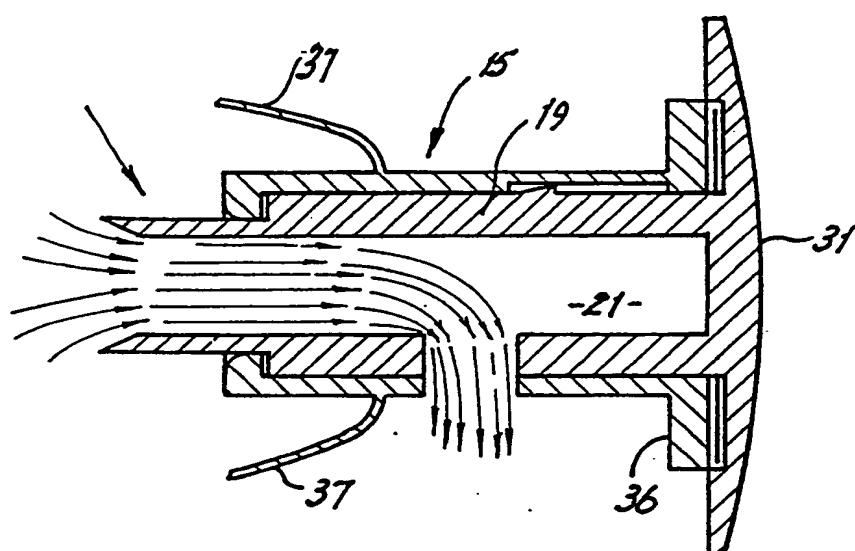
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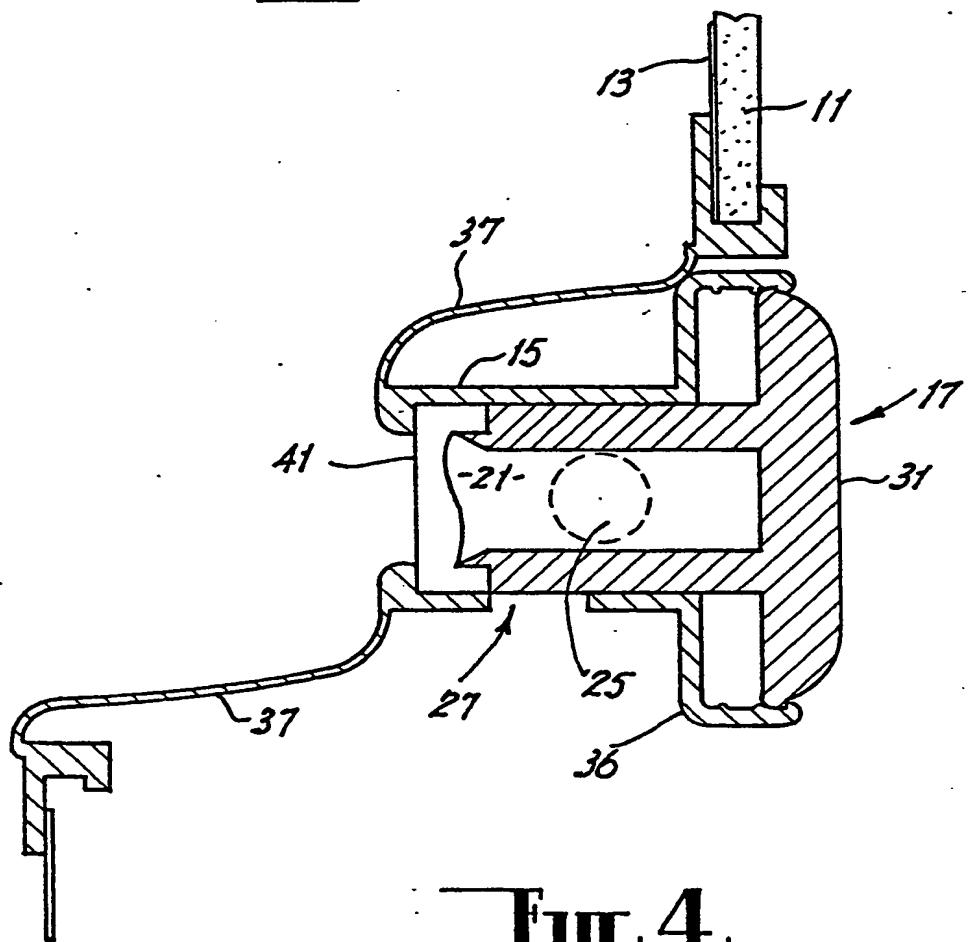
Фіг. 2.

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—Fig. 3.



—Fig. 4.



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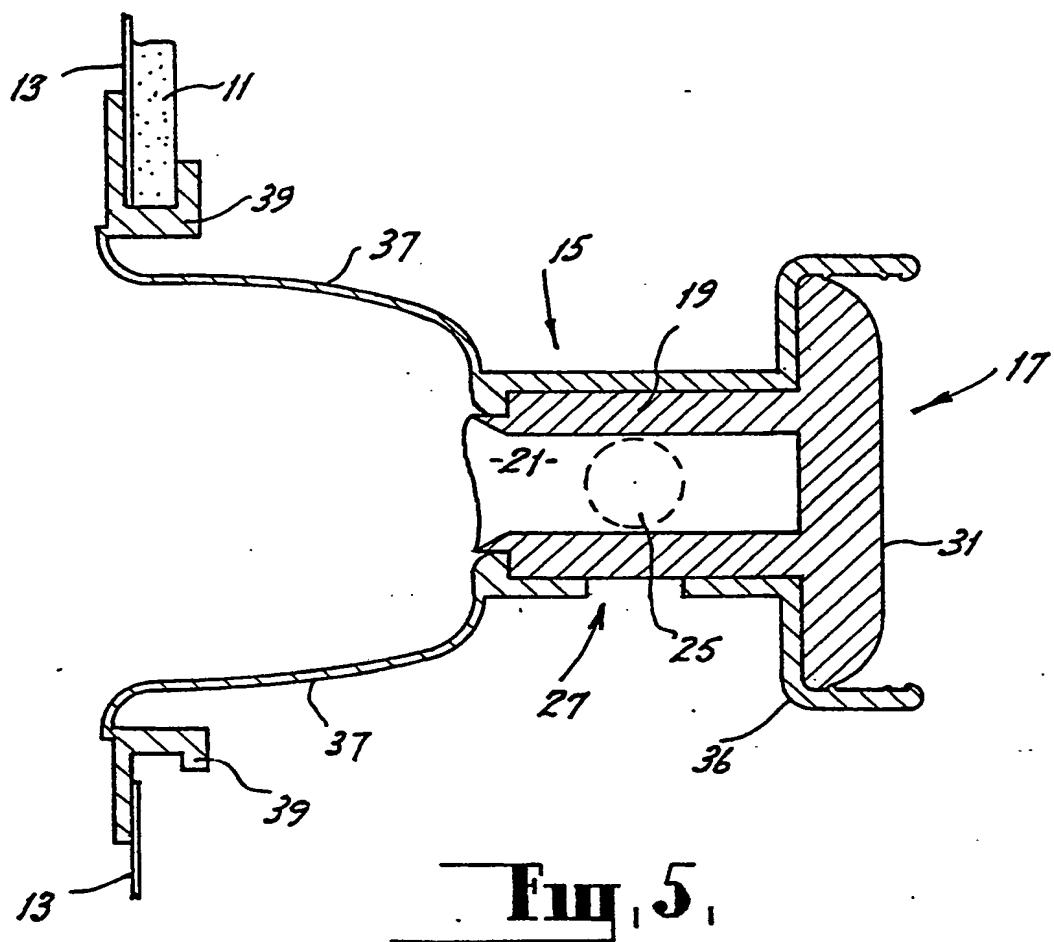


Fig. 5.

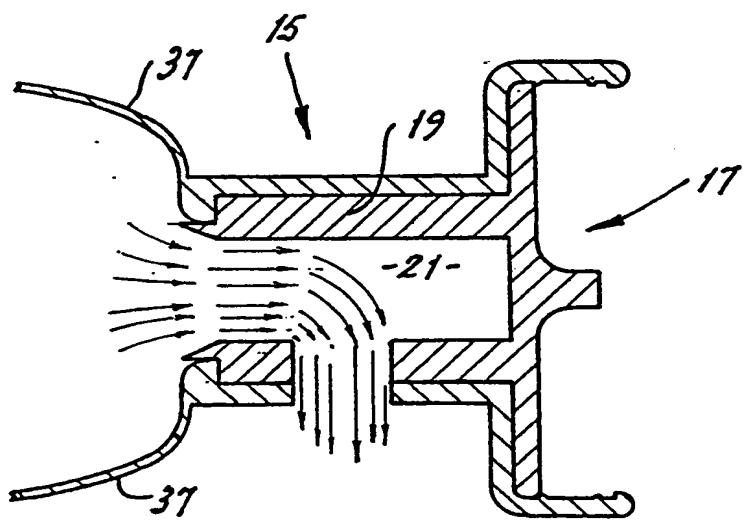


Fig. 6.



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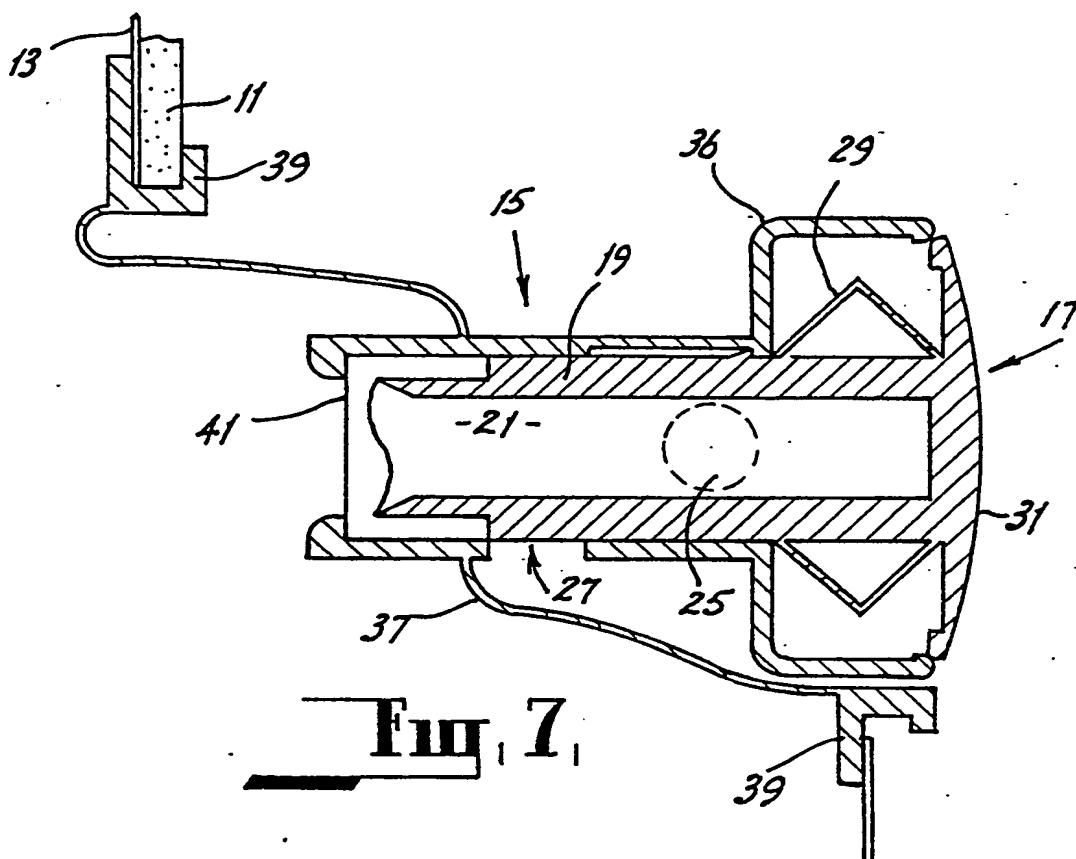


FIG. 7.

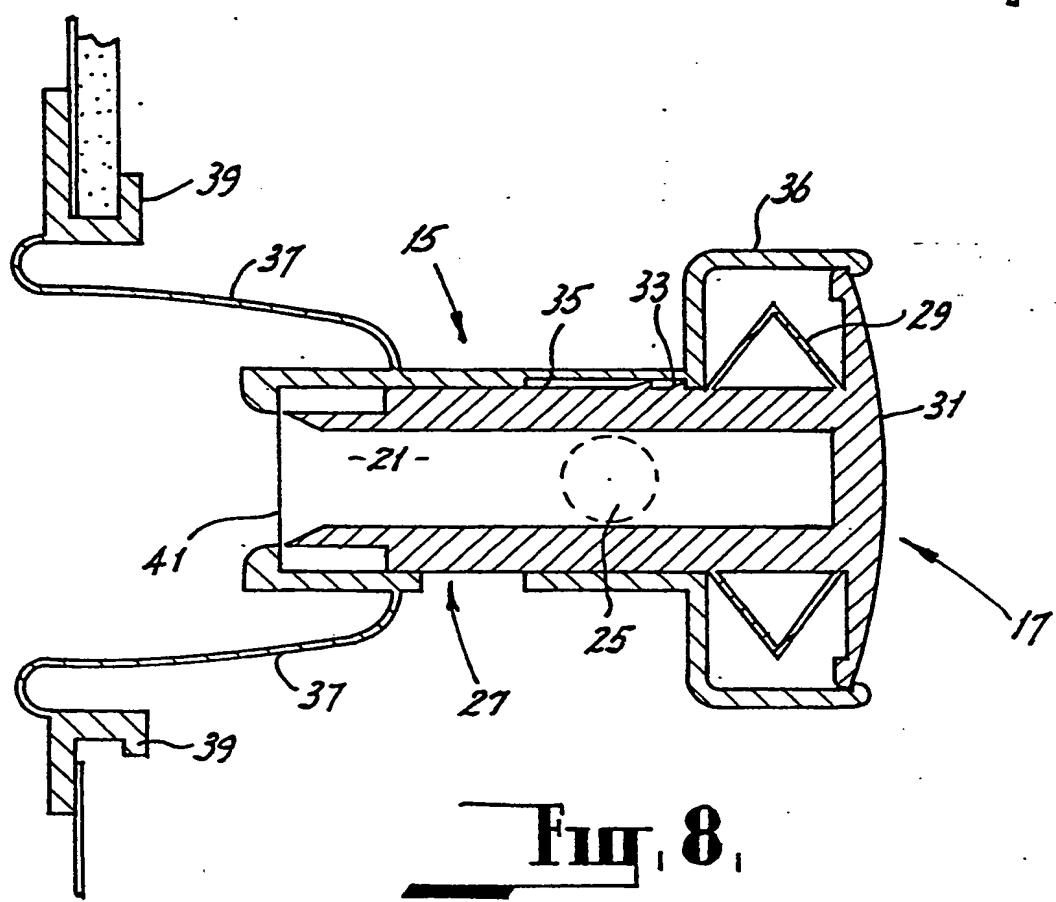
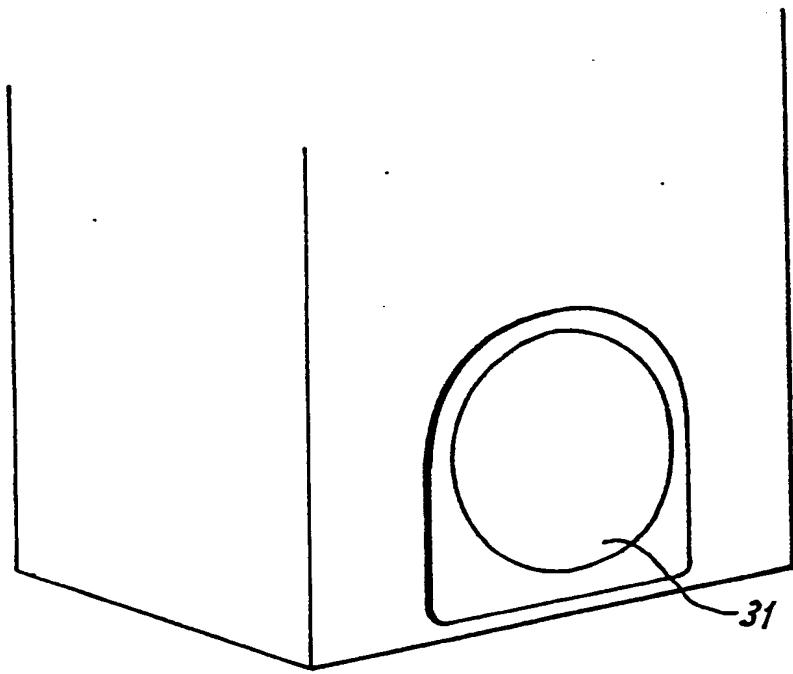
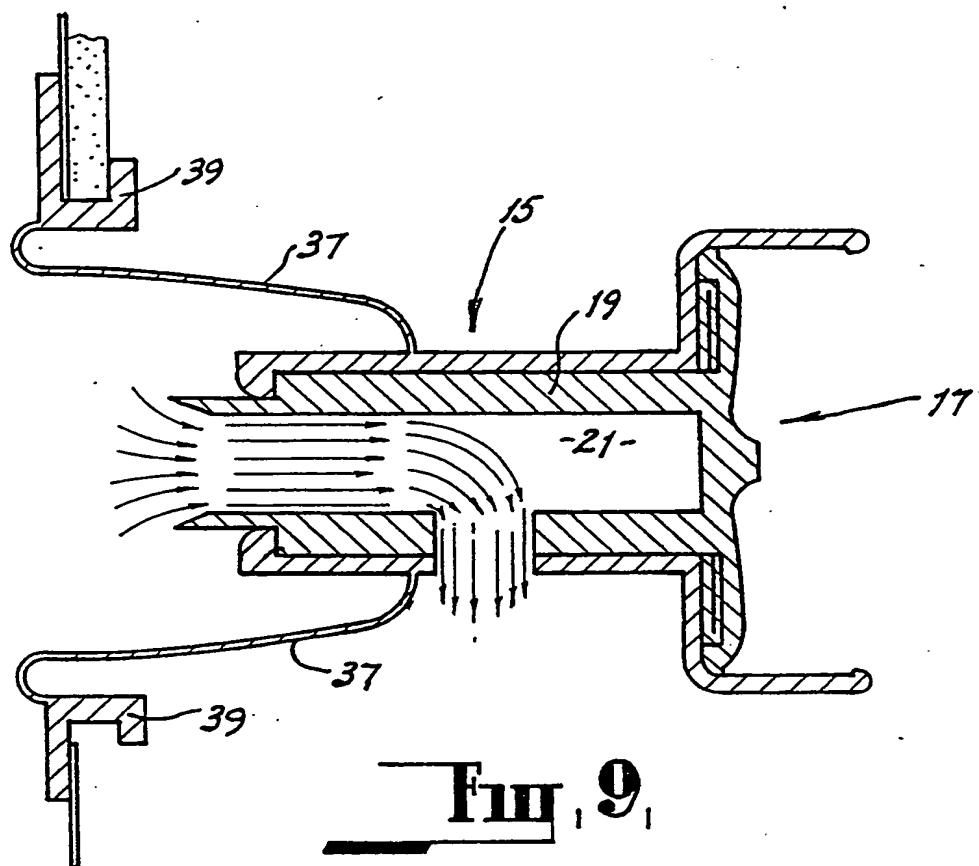


FIG. 8.



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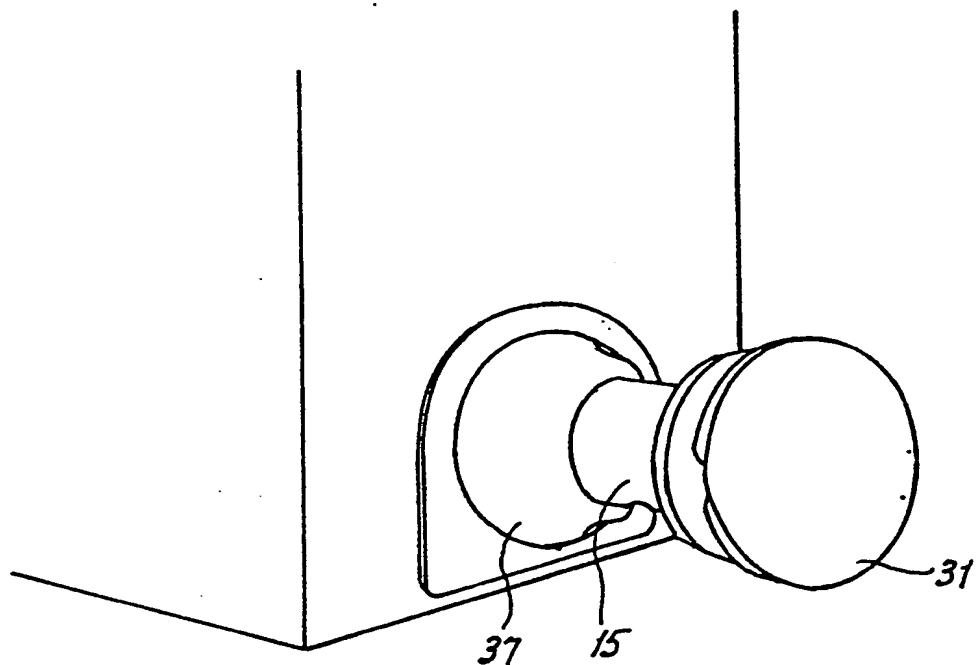


Fig. 11.

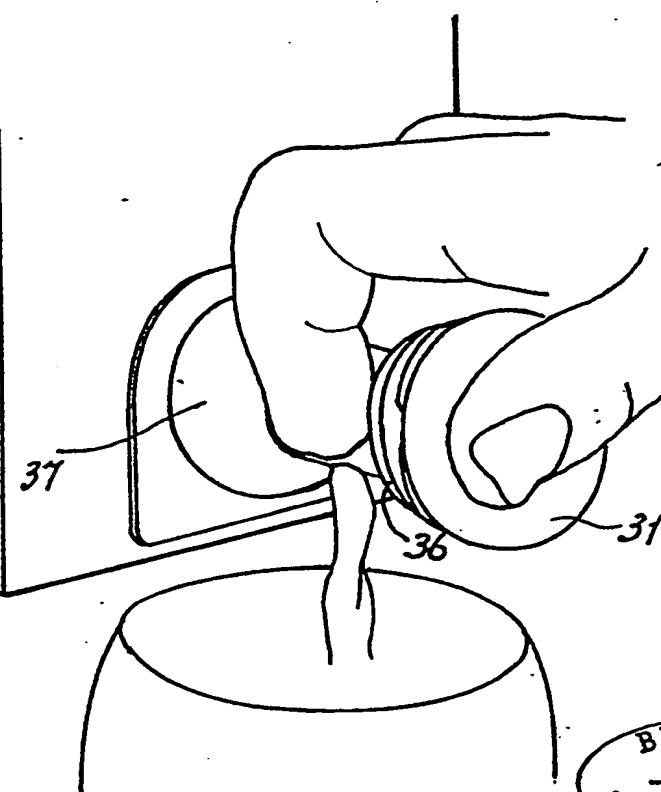


Fig. 12.

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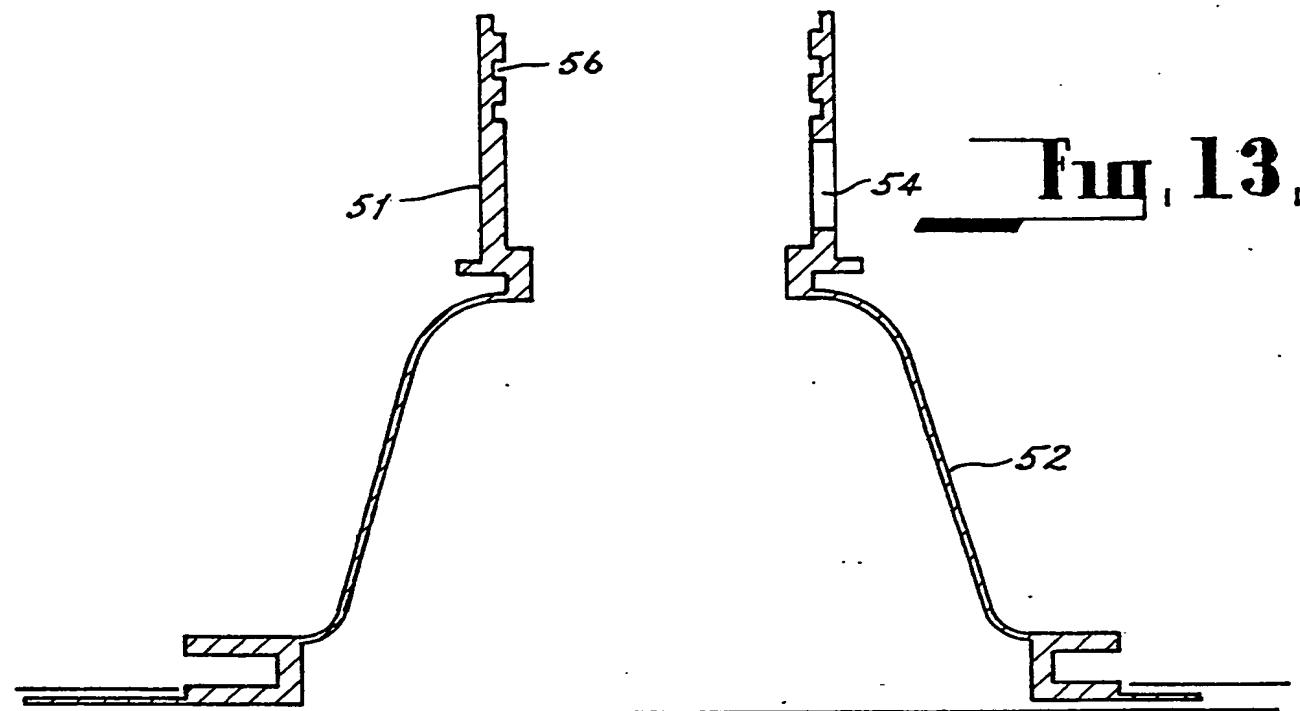


Fig. 13.

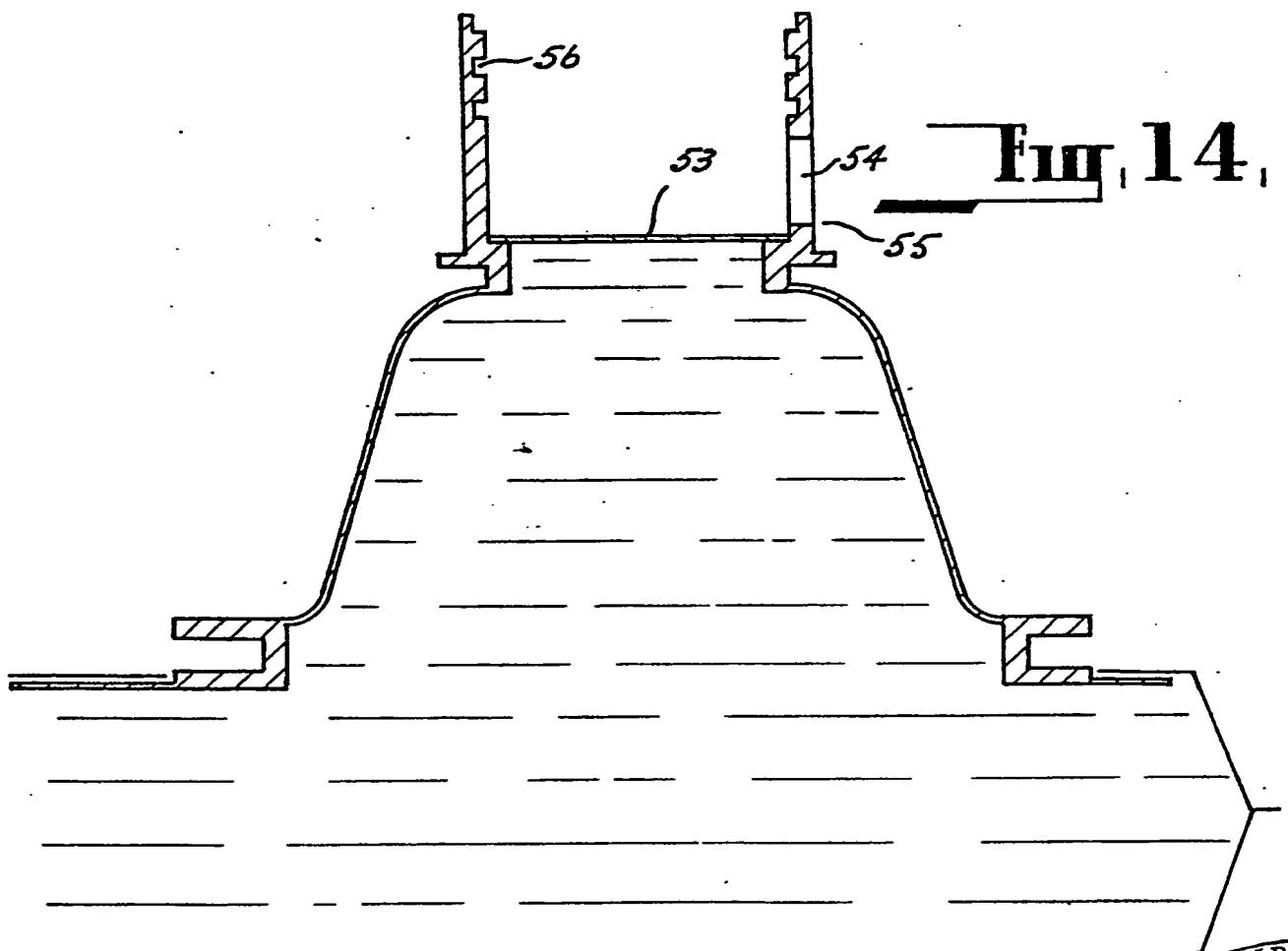


Fig. 14.

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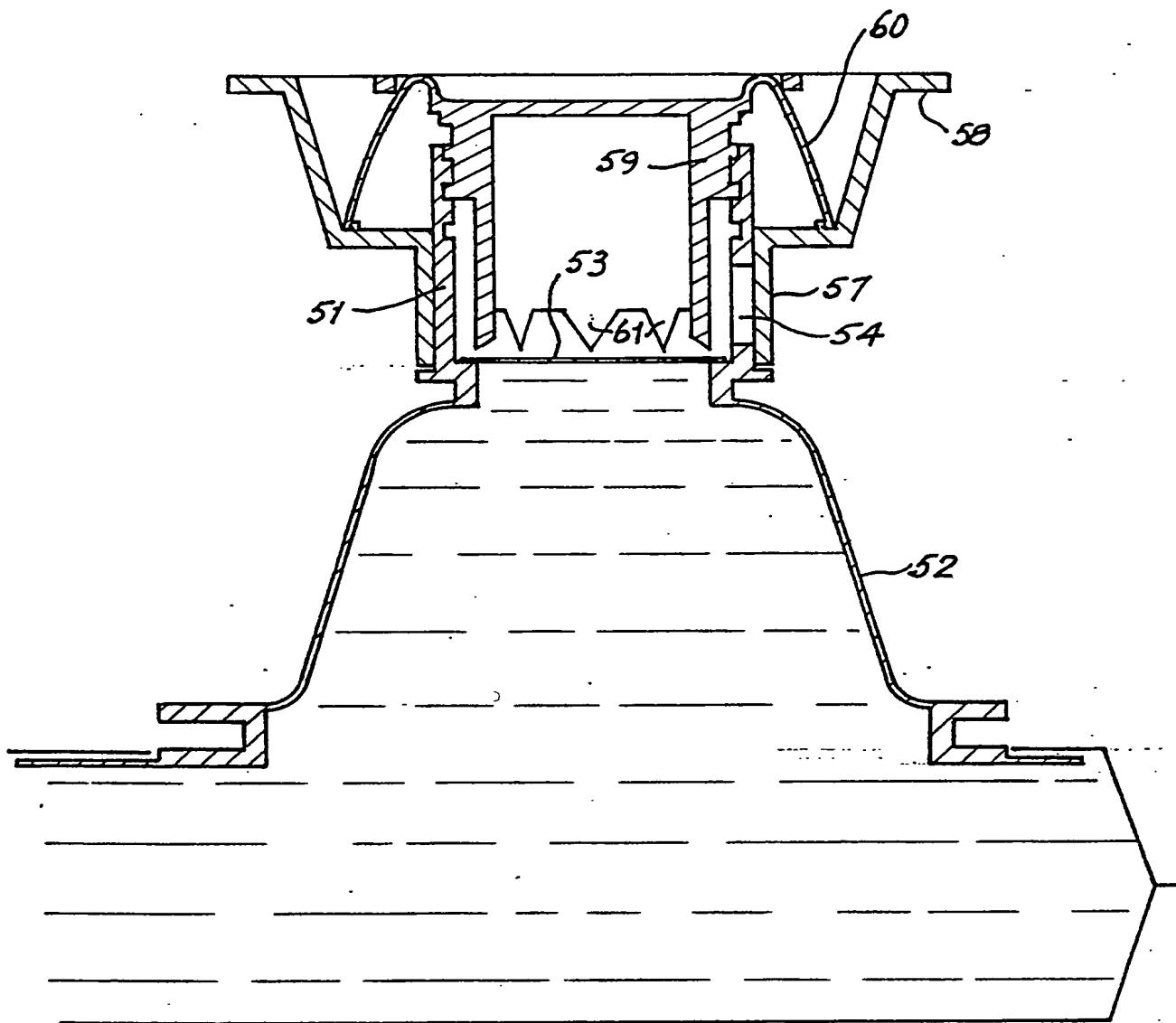


FIG. 15.

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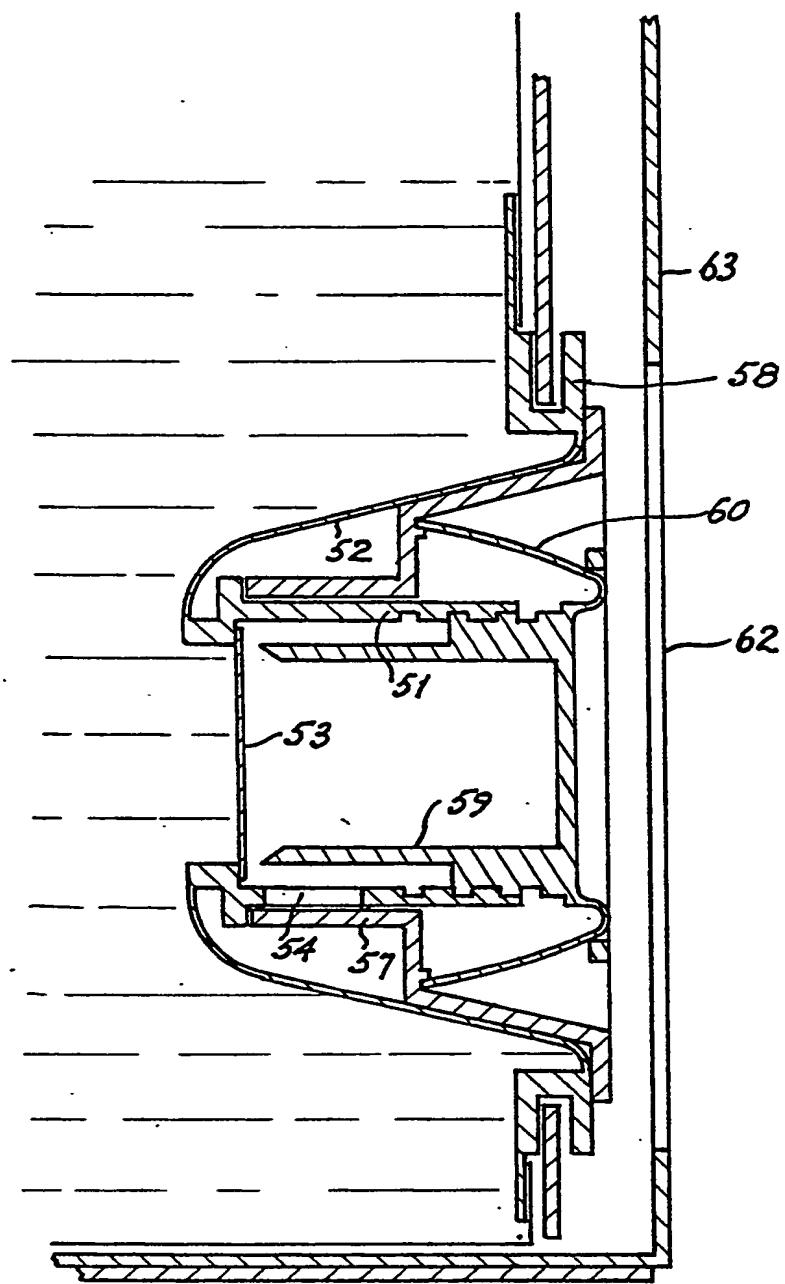


Fig. 16.



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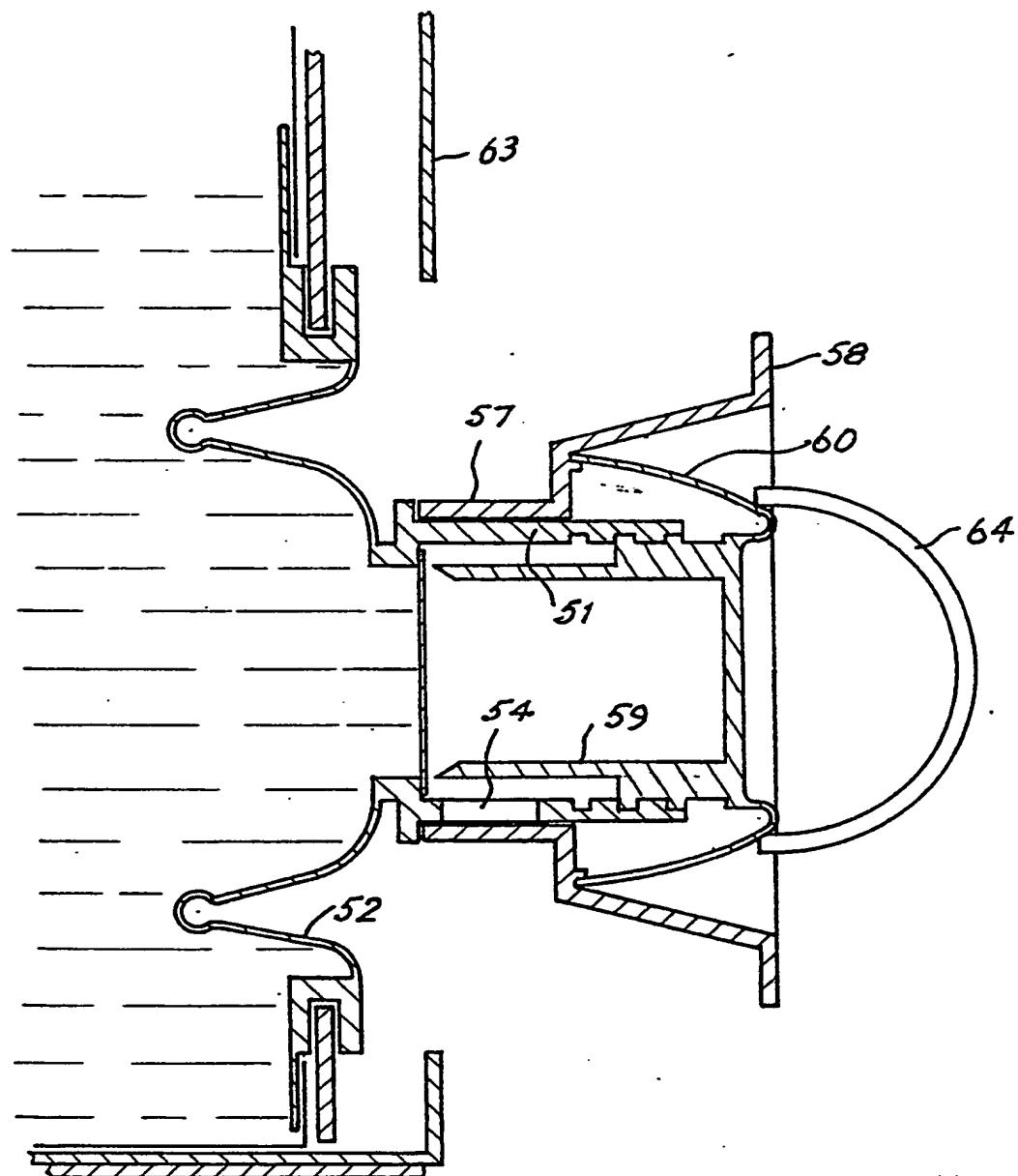


Fig. 17.

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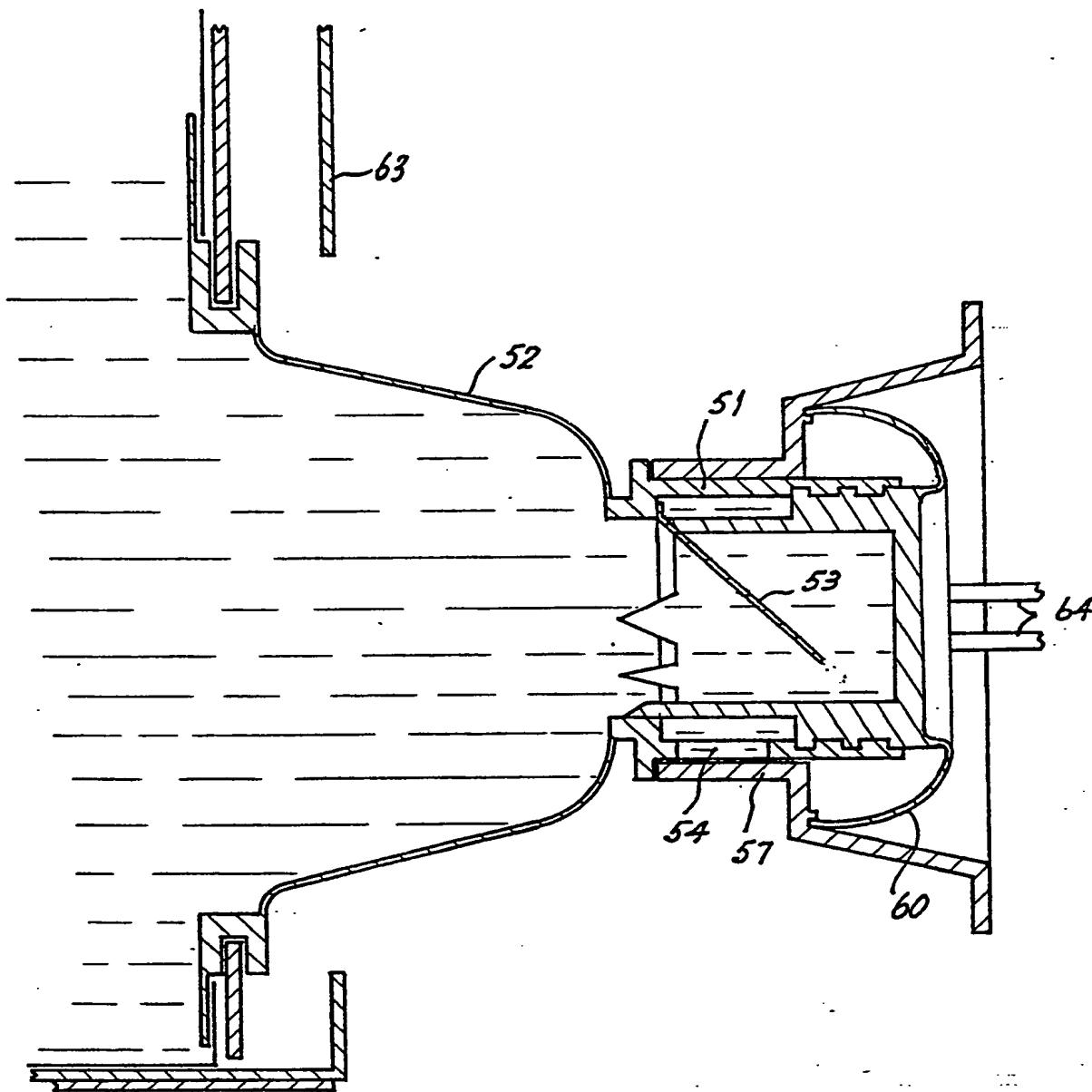


FIG. 18.



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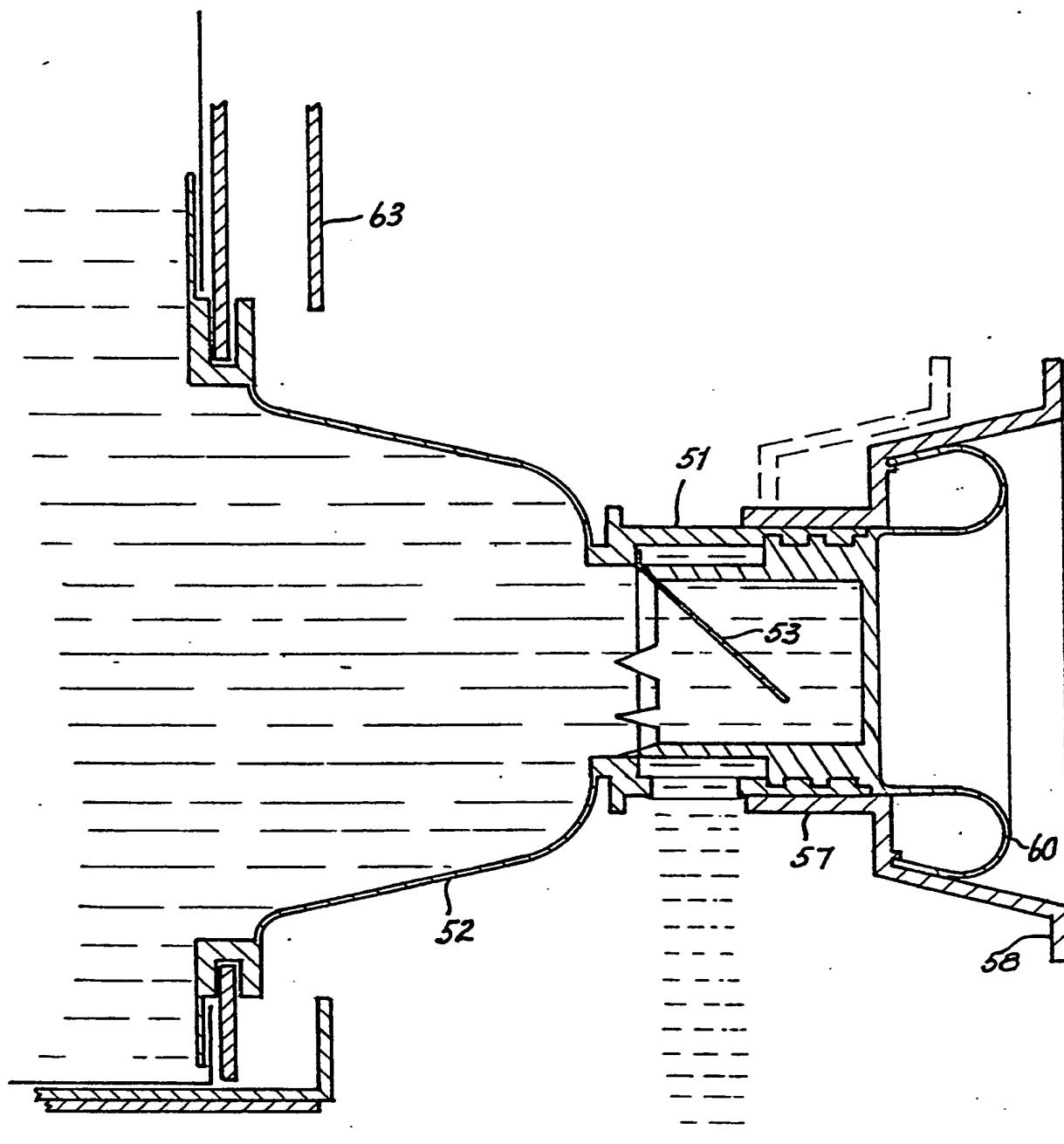


Fig. 19.

INTERNATIONAL SEARCH REPORT

International Application No PCT/AU80/00011

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.³ B65D 77/06, 47/26, 47/28, 47/30, 47/36, 25/44, B67D 3/04,
F16K 3/24, 5/04, 21/00, 27/00

II. FIELDS SEARCHED

Minimum Documentation Searched ⁴

Classification System	Classification Symbols
I P C US Cl.	B67D 3/04 222/130, 222/548, 222/554, 222/553, 222/545, 222/559

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched ⁵

AU: IPC as above, plus
B65D 47/26, 25/44;

Australian Classification 57S

III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴

Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	AU, B, 29137/71 (461701), Published 1972, Nov. 23, see page 2 and page 4 lines 12-17, RIEKE CORPORATION.	(1-15)
X	AU, A, 30349/71, Published 1973, Jan. 4, see page 2, RIEKE CORPORATION.	(1-15)
X	AU, A, 25502/67, Published 1969, Feb. 6, see page 8, line 11 - page 9, line 23, The Corrugated Container Company.	(1-11)
X	US, A, 3207388, Published 1965, Sept. 21, see column 3, lines 57-66, WADDINGTON.	(1-11)
X	US, A, 2993628, Published 1961, Jul. 25, see Column 2, lines 30-49, J.E. BORAH.	(1-15)
X	US, A, 3057520, Published 1962, Oct. 9, see Column 2, lines 35-46, O.P. NUFFER.	(1-11)
X	AU, B, 73238/74 (493047), Published 1976, Mar. 18, PAK PACIFIC CORP. PTY. LTD.	(1-15)
X	AU, B, 66775/65 (403840), Published 1968, May 16, C. H. MALPAS.	(1-15)

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"X" document of particular relevance

IV. CERTIFICATION

Date of the Actual Completion of the International Search ¹⁹

4th July 1980

Date of Mailing of this International Search Report ²⁰

18 JULY 1980
(18-07-80)

International Searching Authority ¹

Australian Patent Office

Signature of Authorized Officer ²⁰

A S MOORE

A. S. Moore